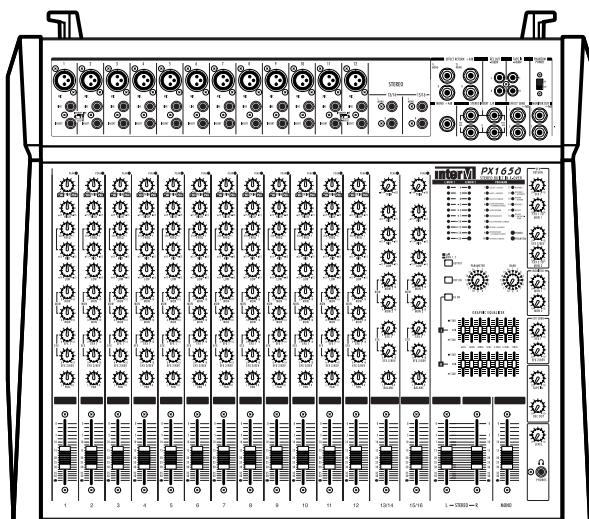


Operating manual

PX-1650 *Stereo Built In X-OVER*



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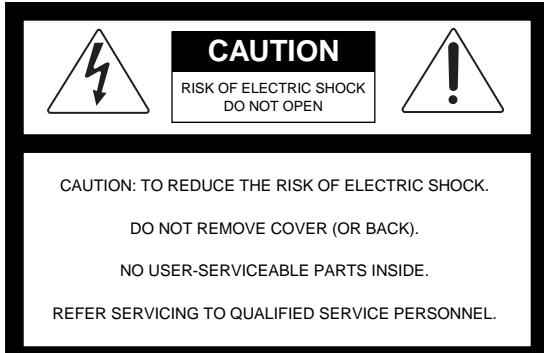
Introduction

Thank you for purchasing a PX-1650 Stereo Quad Powered Mixer Built in X-OVER. The PX-1650 Series provides an excellent balance of operability, functionality and ease of use. In order to take full advantage of the PX-1650 Series capabilities and enjoy years of trouble-free use, please read this manual carefully.

Unpacking and Installation

Although it is neither complicated to install nor difficult to operate your set, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its many features and how to use them. Please take a great care in unpacking your set and do not discard the carton and other packing materials. They may be needed when moving your set and are required if it ever becomes necessary to return your set for service.

Never place the unit near radiators, in front of heating vents, to direct sun light, in excessive humid or dusty location to avoid early damage and for your years of quality entertainment. Connect your complementary components as illustrated in the following page.



WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attention: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.

Features

- PX-1650 MONO INPUTS CHANNELS

The PX-1650 stereo quad powered mixer built in x-over provides 8, 12 channels of mono input that can be mixed down to a stereo, 2 monitor, 2 EFFECT SEND output.

- XLR type connectors are provided for MIC jacks and 1/4" TRS connectors are provided for the LINE jacks.

- 2 STEREO CHANNELS

These mixing consoles provide 2 channels of stereo channel input that can be mixed down to a Stereo, 2 Monitor, 2 EFFECT sends out (MONITOR 1, 2 Per/EFFECT Send 1, 2 Post).

- 2 STEREO AUX RETURN

- 3 BAND EQ WITH SWEEPABLE MID-RANGE BAND

All mono input channels include 3 band EQ with sweepable mid-range frequency.

- INPUT CH INSERT I/O JACK

INPUT CH INSERT I/O jack is provided on each channel, allowing you to connect effect devices independently for each channel.

- 7 BAND STEREO GRAPHIC EQUALIZER

Frequency Band: 63, 160, 400, 1k, 2.5k, 6.4k, 15kHz.

- 16 x 16 PROGRAMMABLE DSP

- 4 CHANNEL STEREO POWER AMP

250W x 4, 4Ω at THD 0.1%.

Precautions

- AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION

Keep the unit away from locations where it is likely to be exposed to high temperatures or humidity-such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

- VENTILATION

The unit has ventilation slots on the side and bottom panels. Do not block these vents.

- AVOID PHYSICAL SHOCKS

Strong physical shocks to the unit can cause damage. Handle it with care.

- DO NOT OPEN THE CASE OR ATTEMPT REPAIRS OR MODIFICATIONS YOURSELF

This product contains no user-serviceable parts. Refer all maintenance to qualified **Inter-M** service personnel. Opening the case and/or tampering with internal circuitry voids the warranty.

- ALWAYS POWER OFF BEFORE MAKING CONNECTIONS

Always turn the power OFF before connecting or disconnecting cables. This is important to prevent damage to the unit itself as well as other connected equipment.

- HANDLE CABLES CAREFULLY

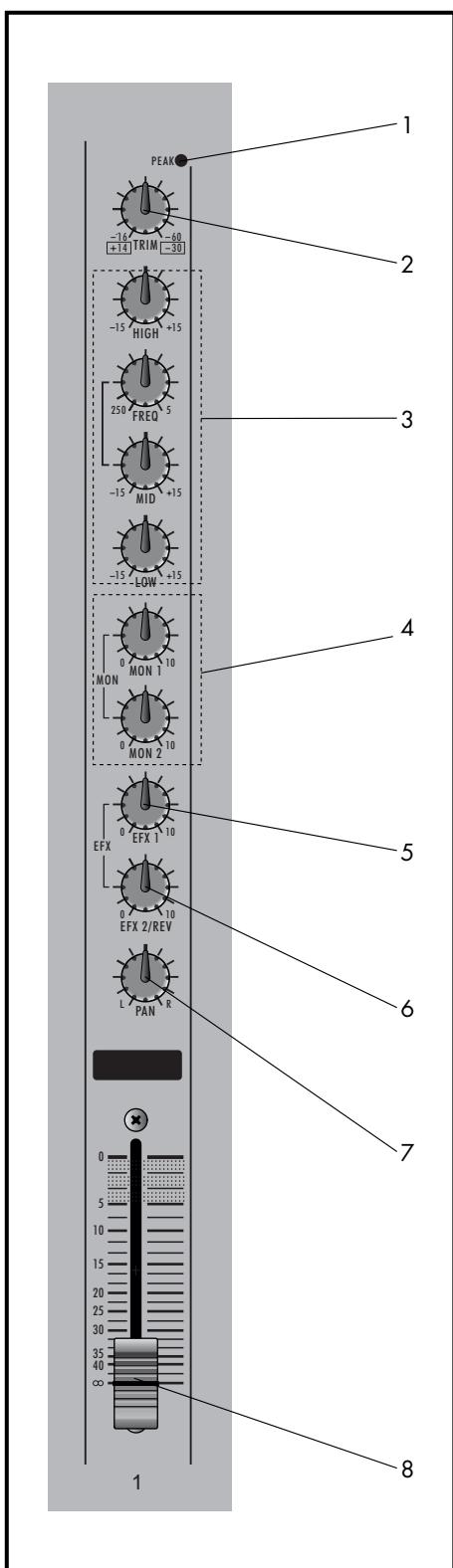
Always plug and unplug cables-including the AC power cord-by gripping the connector, not the cord.

- CLEAN WITH A SOFT DRY CLOTH

Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

Front Panel Controls

1. MONO INPUT SECTION



1. PEAK LED INDICATORS

This LED indicators let you check the level of the signal input to the channel.

The peak indicator lights when the input signal reaches 3dB below the channel's clipping point.

This indicator show the level of the post-EQ/pre-fader signal. If the PEAK indicator lights more than briefly on high-level transients, you should use the GAIN control to decrease the input sensitivity of the channel. If this dose not work, reduce the output level of the connected source.

2. GAIN CONTROL

This control adjusts the channel's mic input sensitivity between -60dB and -16dB and the line input sensitivity between -30dB and +14dB. Continuously variable gain control allows optimum adjustment to virtually any microphone or line source.

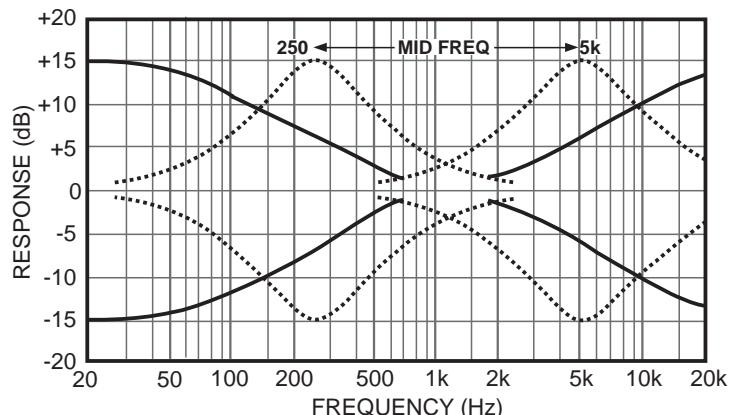
3. EQUALIZER CONTROLS

This set of four controls allows you to individually modify the channel's response. Each channel of the PX-1650 is equipped with a 3 band equalizer (EQ) that has shelving HIGH and LOW controls, and a peaking MID control with a sweepable center frequency (which is adjusted by the MID FREQ control). Refer to "Using the Channel Equalizers" on page 14 for details on the use of these controls.

HIGH: 12kHz, ± 15 dB shelving type

MID: 250Hz~5kHz, ± 15 dB peaking type

LOW: 80Hz, ± 15 dB shelving type



4. MONITOR 1 AND 2 CONTROL

These control determines the level of the post-EQ/pre-fader signal that is sent from the channel to the monitor mixing buses. All signal sent to the Monitor bus are mixed, then fed to the Monitor 1 and 2 Jacks on the top panel after their final output levels have been set by the Monitor 1 and 2 controls in the Master control section.

5. EFFECT 1 CONTROL

This control determines the level of the post-EQ/post-fader signal that is sent from the channel to the Effect 1 mixing bus. The channel signals mixed by this bus have their overall level set by the EFFECT SEND 1 Control. Then are sent to the EFFECT SEND 1 jack. The output from this jack can be processed by an external effect device.

6. EFFECT 2 CONTROL

This control determines the level of the post-EQ/post-fader signal that is sent from the channel to the Effect 2 mixing bus. The channel signals mixed by this bus are sent via the EFFECT SEND 2 Control to the EFFECT SEND 2 jack on the top panel. The output signal is also fed into the PX-1650 internal digital signal processor. Thus, a signal fed to the Effect 2 bus using this control can be processed externally or internally.

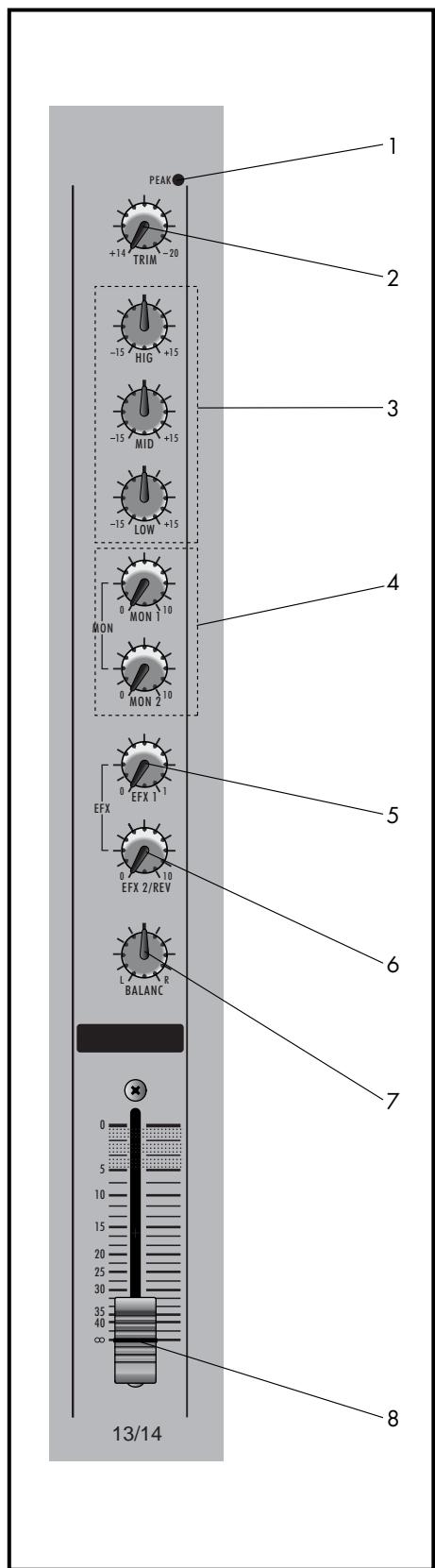
7. PAN CONTROL

This control pans the channel signal across the master L and R buses, thus determining the perceived position of the sound from that channel in the output stereo sound field. If a PAN control is set all the way to the left, for example, the sound from that channel will be heard from the left speaker system only. If it is set all the way to the right, the sound will be heard from the right speaker system only. Intermediate settings will cause the sound to appear at corresponding locations in the stereo sound field.

8. CHANNEL FADER

This is the channel's main level control. It determines the level of the signal that is sent from the channel to the master mixing and effect buses. It is the settings of the input channel faders that determine the "mix", or the balance of sound levels between the instruments or other sources connected to the inputs. When a channel is not being used, its fader should be set at the minimum position to prevent the addition of unwanted noise to the main program signal.

2. STEREO INPUT SECTION



1. PEAK LED INDICATORS

This LED indicators let you check the level of the signal input to the channel.

The peak indicator lights when the input signal reaches 3dB below the channel's clipping point.

This indicator show the level of the post-EQ/pre-fader signal. If the PEAK indicator lights more than briefly on high-level transients, you should use the GAIN control to decrease the input sensitivity of the channel. If this dose not work, reduce the output level of the connected source.

2. GAIN CONTROL

This control adjusts the stereo channel's input sensitivity between -20dB and +14dB. Continuously variable gain control allows optimum adjustment to virtually any line source.

3. EQUALIZER CONTROLS

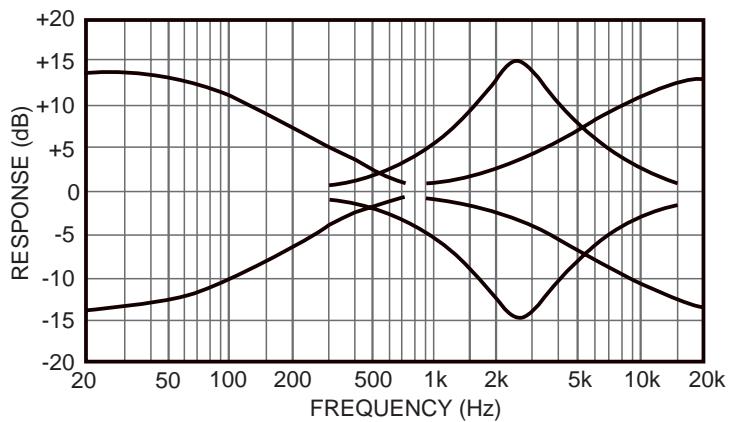
This set of three controls allows you to individually modify the stereo input response. Stereo channel of the PX-1650 is equipped with the 3 band equalizer (EQ) that has shelving HIGH, LOW, and Peaking MID controls. Frequency response will be flat when the knob is center position.

Will be flat when the knob is center position.

HIGH: 12kHz, ± 15 dB shelving type

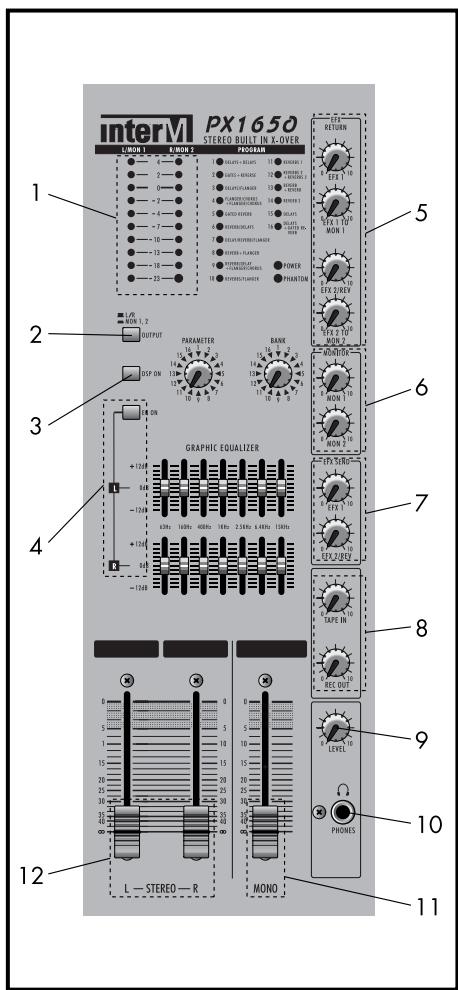
MID: 2.5kHz, ± 15 dB peaking type

LOW: 80Hz, ± 15 dB shelving type



4~8. Please refer to Mono Input Section No. 4~8.

3. MASTER SECTION



Determines the application parameter of the selected program for each program 16 different parameter are available. Refer to "Using the Digital Signal Processor" on page 15 for details on the use of this section.

4. STEREO GRAPHIC EQUALIZER SECTION

The PX-1650 Series internal stereo graphic equalizer (GEQ) allows the fine response shaping of the main program output. This section has seven linear controls, corresponding to center frequencies of 63Hz, 160Hz, 400Hz, 1kHz, 2.5kHz, 6.4kHz, 15kHz. Each control permits a maximum boost or cut of 12dB. When a control is set to the center or "0" position, the response in the corresponding band is unaffected. The EQ switch turns the graphic equalizer on and off.

5. EFFECT RETURN CONTROLS

These controls adjust the levels of the signals that are received at the corresponding EFFECT RETURN jacks on the top panel (or from the internal digital signal processor, when the DSP is used in place of external input to the EFFECT RETURN 2 jacks). Each effect return circuit has two controls. The EFX 1, EFX 2 level control adjusts the level of the signal that is mixed into the main program on the master mixing bus. The EFX 1 to MON 1 control set the level of the signal that is mixed into monitor 1 bus, where it is mixed with other signal for output by the monitor/out jacks on the top panel. The EFX 2 to MON 2 control used same function as EFX 1 to MON 1 control but this control offer to DSP output signal, when you turn on the DSP.

1. OUTPUT LEVEL METER

A vertical row of ten LED show the continuous output level of main Output L/R or monitor 1/2 by signal select switch. This type of display is free from over shoot problem of mechanical meters and is highly visible under poor lighting conditions.

The 0 LED means an output level of +4dB for +4dB output (that's the rated level).

2. SIGNAL SELECT SWITCH

This switch is used to select which signals are displayed the following table shows how they work.

Meters	Switch Up	Switch Down
L/Monitor 1	Main L Output	Monitor 1 Output
R/Monitor 2	Main R Output	Monitor 2 Output

Output	Switch Up	Switch Down
Amp & Headphone	Main L/R	Monitor 1/2

You can select main L/R or monitor 1/2 signal to Amp Output and Headphone Output.

3. DIGITAL EFFECT SECTION

This section lets you control the PX-1650 Series internal digital signal processor (DSP).

The bank of LED indicators at the top of the section show the current DSP program selection, which is changed using the PROGRAM control.

6. MONITOR 1, 2 OUTPUT CONTROL

These controls adjust the overall output levels of the monitor mix that are setup using the monitor control of each channel. The Monitor 1 or Monitor 2 mix signal are sent to the monitor output 1 and monitor out 2 jacks on the top panel. These controls should be used to optimally match the monitor mix output levels to the input sensitivities of the power amplifiers used.

7. EFFECT SEND CONTROLS

These Control, adjust the overall output levels of the effect mixes that are set up using the EFFECT 1 and EFFECT 2 controls of each input channel. The EFFECT SEND 1 Control sets the overall level of the signal that appears at the EFFECT SEND 1 jack on the top panel. The EFFECT SEND 2 Control sets the overall level of the Effect 2 mix signal, which is sent to both the EFFECT SEND 2 jack on the top panel and the internal digital signal processor. These Control should be used to optimally match the effect mix output levels to the input sensitivities of the effect signal processors used.

8. REC OUT AND TAPE IN CONTROLS

These controls adjust the levels of the stereo signals to and from a connected tape deck. The REC OUT control sets the level of the unequalized pre-fader master mix signal that is sent for recording by the tape deck via the REC OUT jacks on the top panel. The TAPE IN control adjusts the level of the playback signal that is inserted to the master mixing bus from the TAPE IN jacks on the top panel. This playback signal is added to the bus in front of GEQ, allowing the PX-1650 to equalizer the signal from the tape deck before output.

9. PHONES CONTROL

This control adjusts the level of the stereo signal delivered from the PHONES jack located directly below it on the front panel. Since this level adjustment is made after the GEQ, the volume of sound heard from the headphones will be affected by both the master stereo faders and the PHONES control.

10. PHONES JACK

This jack delivers the main program signal to a pair of 40Ω stereo monitor headphones. The volume of the output signal is adjusted by both the PHONES control and the master stereo faders.

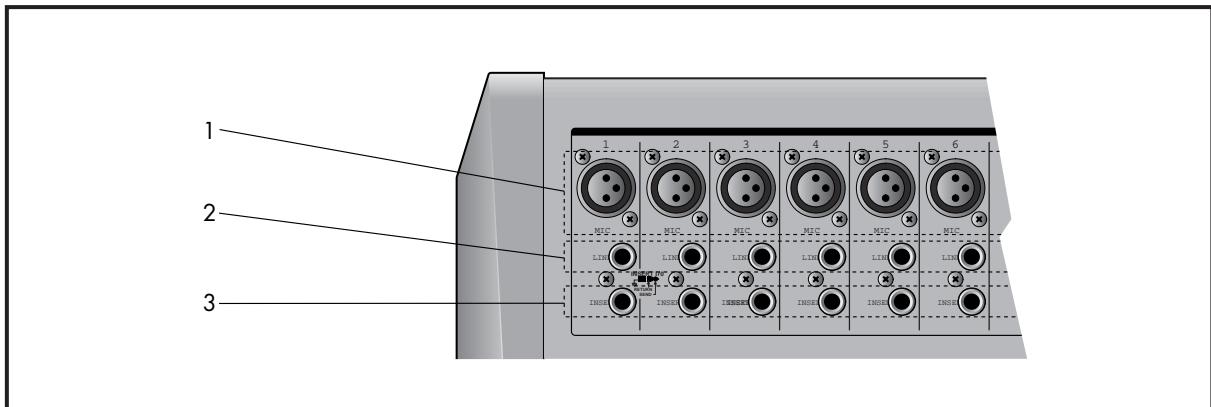
11. MONO OUTPUT FADER

This fader adjusts the final level of the combined stereo signal and send the mono output jacks.

12. MASTER STEREO FADERS

These are the main volume controls for the overall program mix. They independently adjust the levels of the right and left channels of the stereo signal that is sent to both the rear-panel SPEAKER jacks and the GEQ PHONES jack on the front panel.

Top Panel Controls



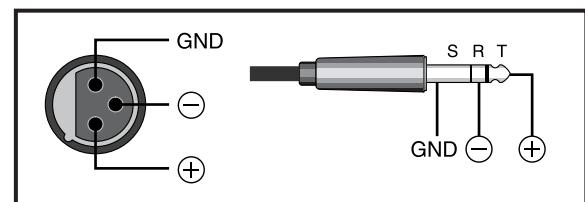
* Phantom Power Warning

To prevent hazard or damage, connect only microphones and cables that conform to the IEC268-15A standard.

1. 2. CHANNEL INPUT CONNECTORS

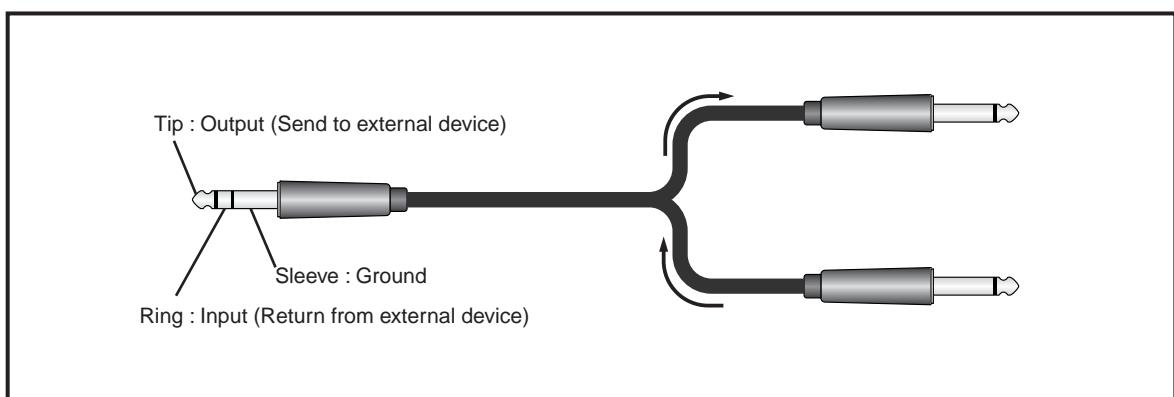
Each of the PX-1650 input channel is provided with both a balance XLR connector (1) and a balance tip-ring-sleeve 1/4" phone jack (2). The channel's input signal is used to select between these input connectors signal sources that don't require phantom power should be connected to the phone jack (2) when the phantom power on/off switch is turned on.

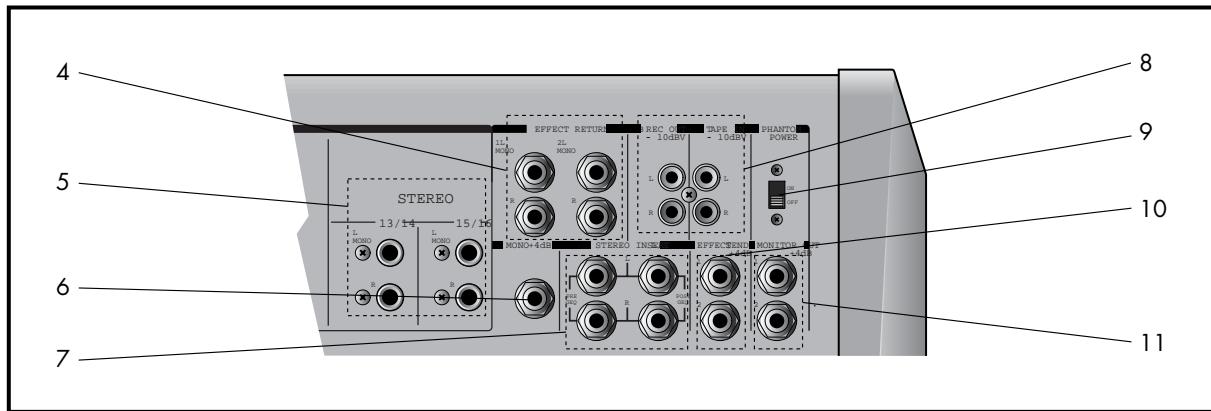
Line	XLR	Phone jack
GROUND	Pin 1	Sleeve
HOT (+)	Pin 2	Tip
COLD (-)	Pin 3	Ring



3. CHANNEL INSERT I/O JACK

Each input channel has a tip-ring-sleeve 1/4" phone jack that serves as an insert patch point for the connection of external signal processing devices or other equipment between the channel's head amplifier (the first amplifier stage after input) and the EQ stage. The channel insertion point is ideal for the insertion of a compressors, noise gate, equalizer, or other effect that needs to be applied to a specific channel only. This jack accommodates both the send (output) and receive (input) lines required by the insert point. The signals are sent and received at a nominal level of +0dB.





4. EFFECT RETURN JACKS

The output from external effect units fed by the EFFECT SEND jacks can be returned to the main program mix via these 1/4" phone jacks. Note that both effect circuits have stereo EFFECT RETURN jacks, allowing the PX-1650 to accommodate effect devices with stereo output. To return a monophonic effect signal to both channels of the master stereo mixing bus, use the EFFECT RETURN jack (The R jack should be left open). The levels of the signals input by these jacks are adjusted by the corresponding EFFECT RETURN controls on the front panel. The nominal input level for these jacks is +4dB.

5. STEREO CHANNEL INPUT CONNECTORS

Each of the PX-1650 stereo input channel's is provided with both a unbalanced 1/4" phone jack.

To return a monophonic signal to both channels of the master stereo mixing bus, use the stereo input L jack (The R jack should be left open).

The nominal input level for these jacks is -20dB~+14dB.

6. MONO OUT JACKS

This phone jacks send the combined stereo signal.

The nominal output level for these jacks is +4dB.

7. LINE INSERT I/O JACKS

These tip-ring-sleeve 1/4" phone jacks serve as insert patch points for the connection of external signal processing devices or other equipment to the master stereo mixing bus. These are two pairs of jacks, allowing the devices to be connected both in front of and behind the GEQ. The line insertion points are ideal for the insertion of stereo effects that need to be applied to the entire mix. These jacks accommodate both send (output) and receive (input) lines required by the insert points. The signals are sent and received at a nominal level of +4dB.

8. REC OUT AND TAPE IN JACKS

These phone jacks are used to send stereo signals (-10dBV) to and from a connected tape deck. The REC OUT jacks send the unequalized pre-fader signal from the master bus for recording by the tape deck. The TAPE IN jacks connect the playback signal from the tape deck to the master mixing bus in front of the GEQ. The levels of these signals are adjusted by the REC OUT and TAPE IN controls on the front panel.

9. PHANTOM POWER ON/OFF SWITCH

The PHANTOM ON/OFF switch turns the phantom power feature on and off. When turned on, this function supplies +48V power to the positive and negative terminals of the balanced XLR connectors via $6.8k\Omega$ current-limiting/isolation resistors for use by phantom-powered condenser microphones. Signal sources that don't require phantom power should be connected to the phone jack when phantom power is used. The PHANTOM LED indicator lights when phantom power is on.

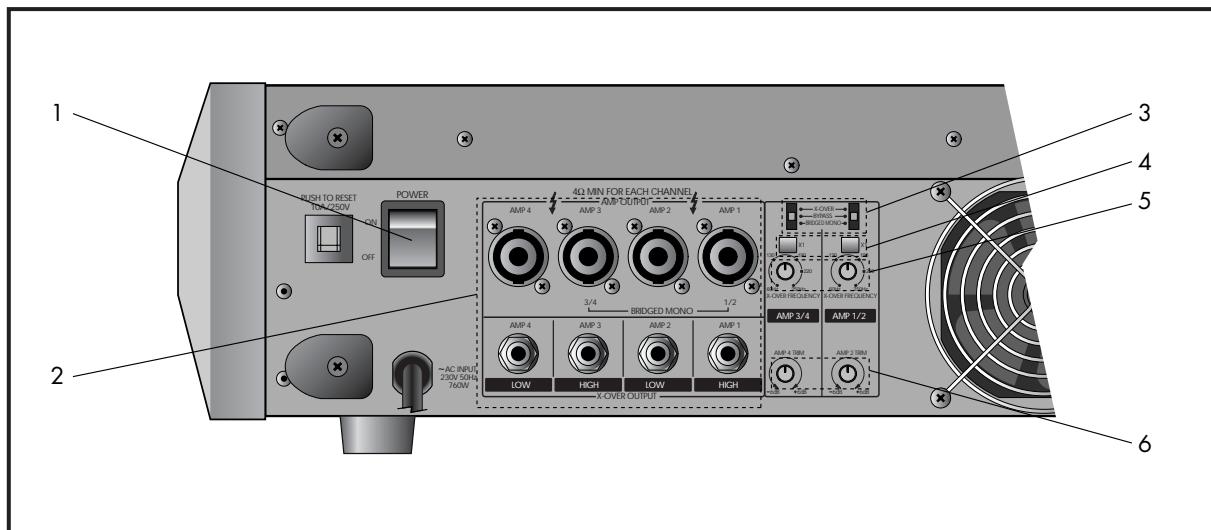
10. EFFECT SEND JACKS

These 1/4" phone jacks deliver the corresponding effect mix signals to feed external effect devices. Note that the EFFECT SEND 2 output is active even when the internal digital signal processor is turned on. The levels of the signals output by these jacks are adjusted by the corresponding EFFECT SEND controls on the front panel. The nominal output level for these jacks is +4dB.

11. MONITOR OUT JACKS

These 1/4" phone jacks deliver the signal from the monitor mixing bus to feed external monitor speaker systems driven by external amplifiers. Although both these jacks output the same monitor mix signal, their output levels can be adjusted individually using the corresponding MONITOR output level controls on the front panel. These jacks have a nominal output level of +4dB.

Rear Panel Controls



1. POWER SWITCH

This switch turns the PX-1650 power supply on and off. The power LED on the front panel will light when the power is on.

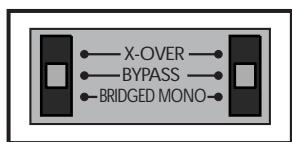
2. SPEAKER OUTPUT JACKS

These standard 1/4" phone jacks and speaker connect jacks are main speaker level output from the PX-1650 power amplifier.

The PX-1650 Series provides four pairs of stereo speaker output jack, labeled 1, 2, 3 and 4. If you connect a speaker system to only one of the jacks (SPEAKER 1 or SPEAKER 2 and SPEAKER 3 or SPEAKER 4), the total load impedance of the speaker system may be as low as 4Ω. If you plug speakers into both the phone jack and speaker connect jack of either channel, the minimum load impedance of each speaker system is 8Ω.

3. MODE SELECTOR

X-over, Bypass or Bridge mono operation is chosen by the mode selector.



X-over: AMP 1 Output-High, AMP 2 Output-Low,
AMP 3 Output-High, AMP 4 Output-Low

You can use this mode when you accept the bi-amp method.
AMP 1 & 3 are used for high frequency and AMP 2 & 4 for low frequency.

Bypass: Each channel signal does not pass through and operate independently (typical guard amplifier).

The AMP 1 output level and AMP 2 output level are adjusted by main left output fader. The AMP 3 output level and AMP 4 output level are adjusted by main right output fader in this mode. The minimum speaker impedance per channel is 4Ω.

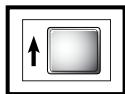
Bridge Mono: AMP 1 (AMP 1 + AMP 2), AMP 3 (AMP 3 + AMP 4)

In this mode, channels 1, 2 or 3, 4 are bridged together and work as one mono amplifier. You can use 250 watt 4 channel as 500 watt 2 channel in this mode. The minimum speaker impedance is 8Ω.

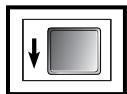
*** CAUTION:** When you change this mode, you must turn off the power switch for protecting speakers from being damaged.

4. FREQUENCY RANGE SELECTOR

Crossover frequencies from 60Hz to 250Hz or 600Hz to 2.5kHz respectively are chosen by the range switch.

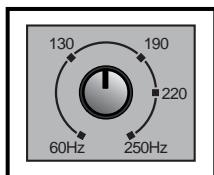


X1: 60Hz to 250Hz



X10: 600Hz to 2.5kHz

5. CROSS FREQUENCY CONTROL

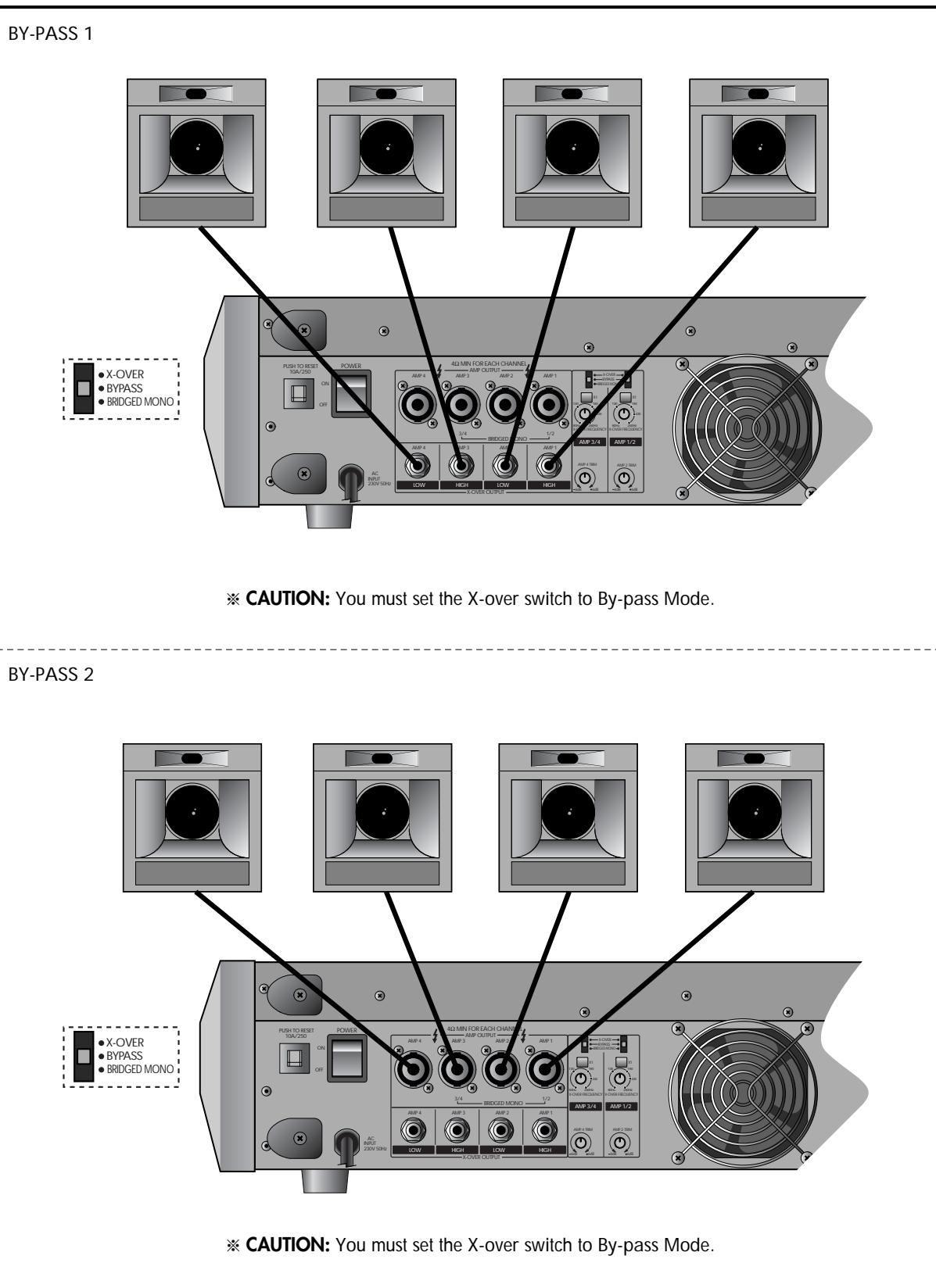


Crossover frequencies are set by adjusting the X-over frequency control.
The PX-1650 Processes 24dB/octave Roll-Off.

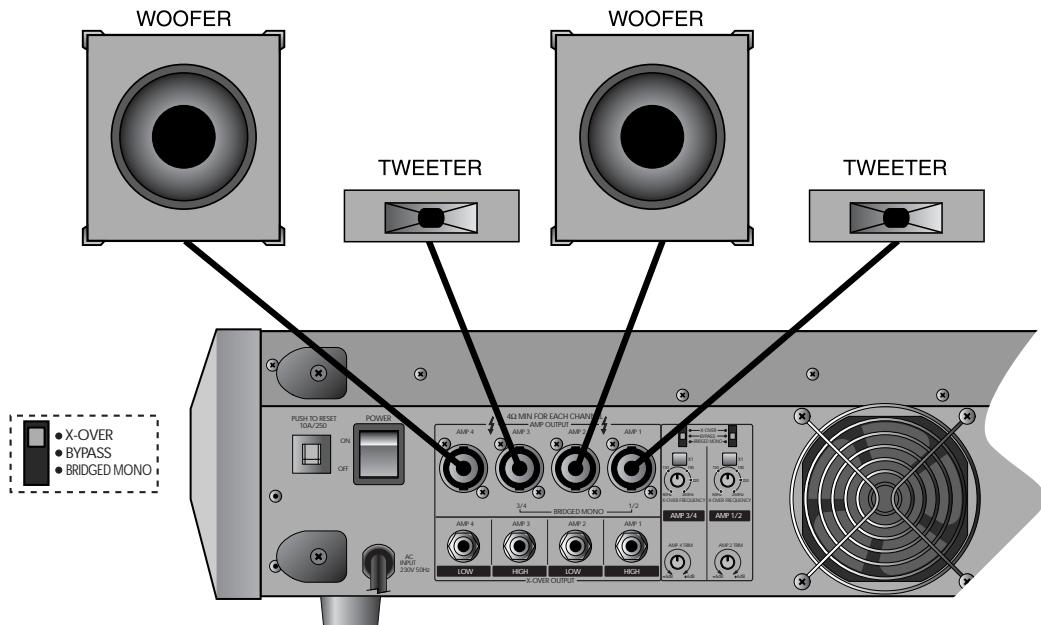
6. GAIN CONTROL

The Low-Output gain levels are selected by this control (-6dB to +6dB).

Speaker Connections

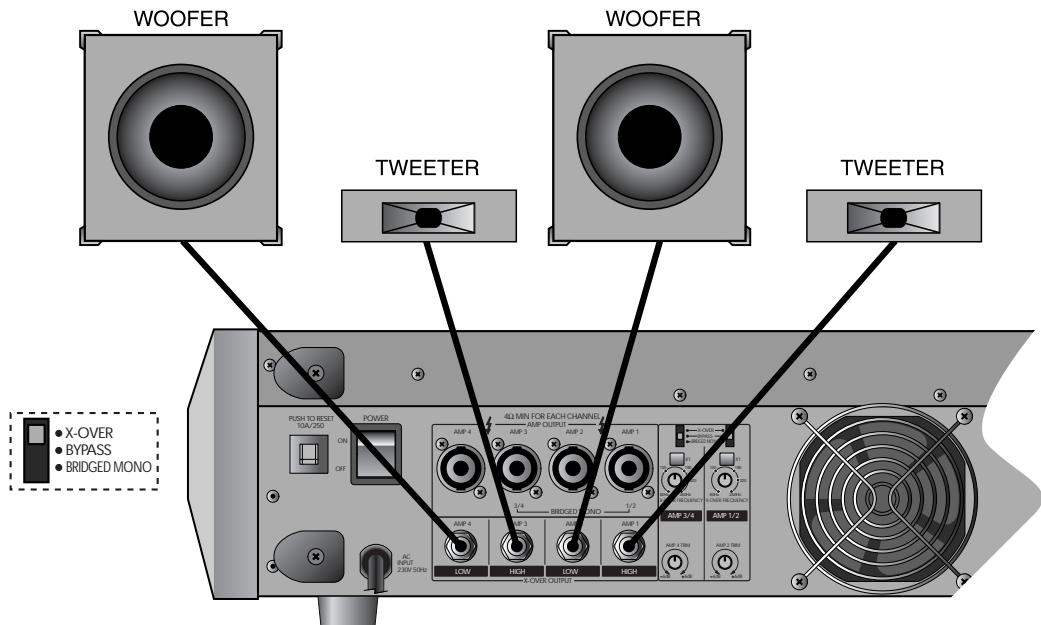


X-OVER 1



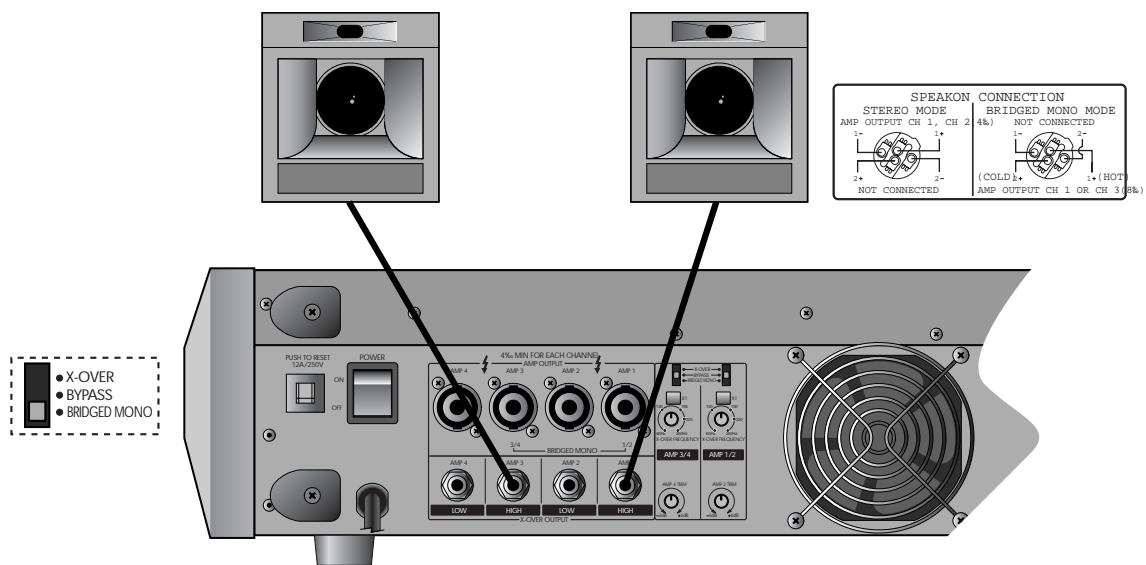
*** CAUTION:** When you apply to X-OVER MODE, you must connect correctly for protecting speakers from being damaged. First, confirm output terminal on the rear panel of PX-1650, and then connect tweeter speakers to CH1 & CH3 output and woofer speakers to CH2 & CH4 output.

X-OVER 2



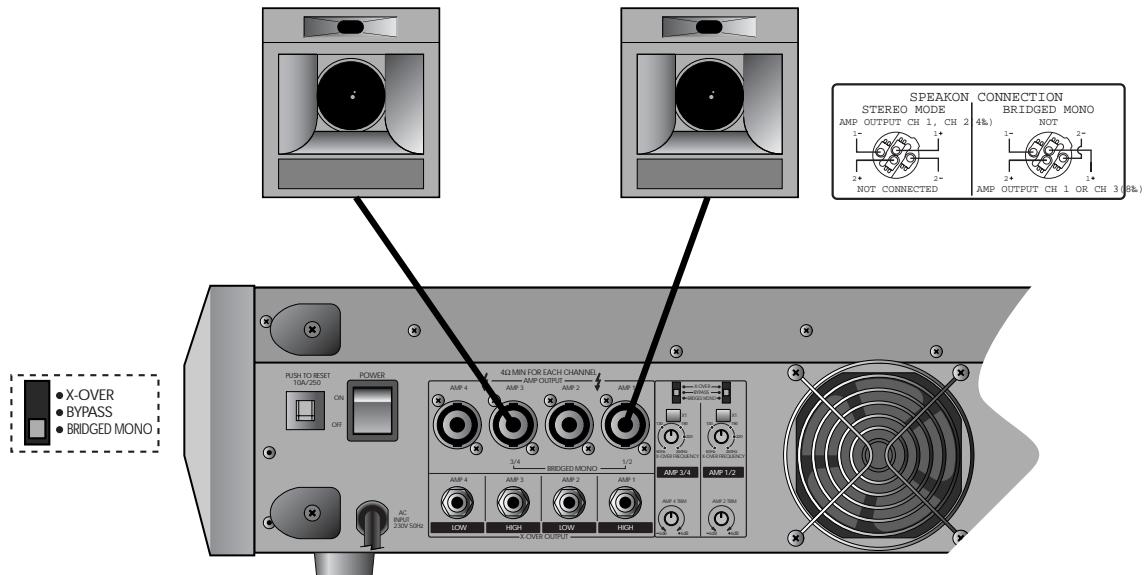
*** CAUTION:** When you apply to X-OVER MODE, you must connect correctly for protecting speakers from being damaged. First, confirm output terminal on the rear panel of PX-1650, and then connect tweeter speakers to CH1 & CH3 output and woofer speakers to CH2 & CH4 output.

BRIDGED MONO 1



※ **CAUTION:** You must set the X-over switch to Bridged Mono and apply input to CH1, CH3.

BRIDGED MONO 2



※ **CAUTION:** You must set the X-over switch to Bridged Mono and apply input to CH1, CH3.

Operating Tips

※ CAUTIONS FOR CONNECTED SOURCES

Please observe the following cautions when connecting sound sources to the PX-1650.

- TURN THE POWER OFF FIRST

Always make sure that the mixer's POWER switch is turned off before connecting or disconnecting any cables. Failure to do so can damage the PX-1650 or connected equipment.

- TURN THE MIXER ON LAST

Always turn the mixer's POWER switch on after first turning on connected sound sources such as electronic instruments or audio equipment.

- DO NOT CONNECT AMPLIFIED INPUT

Never connect the speaker-level output of any amplifier to the mixer's inputs unless you use a suitable high-level attenuation pad or "direct box" to lower the signal's level.

※ MATCHING INPUT LEVELS

When matching input levels, it is a good idea to first make sure that the speaker systems are disconnected from the mixer's speaker outputs (This must be done with the mixer's POWER switch turned off.). The sound can be monitored using a pair of headphones plugged into the front-panel PHONES jack-but make sure that the master stereo faders are set to their minimum levels as first, then raise them just enough to produce a comfortable sound level when you actually begin monitoring input signals and matching levels.

Once all your sources are connected and the entire system is turned on, it is important to accurately match the input sensitivity of each input channel with the source signal it will receive. Do this one channel at a time. Begin by setting the lowest possible sensitivity for the input. Set the GAIN control to -16, and slide the channel fader to between "10" and "5" on its scale.

Now apply a signal to the input. Play the connected source instrument at the loudest level it will produce in actual use-or if the source is a microphone, have the vocalist sing his or her loudest note into it-and watch the channel's PEAK indicator carefully. If it lights at this point, the output level of the source must be reduced. Normally, however, you will have to increase the input sensitivity to achieve optimum matching.

Gradually increase the setting of the GAIN control until the PEAK indicator just barely flashes on the loudest peaks. If you turn the GAIN control up all the way and the PEAK indicator still does not light, then reduce the GAIN control setting to minimum, and gradually increase the GAIN setting again. This time the PEAK indicator should light somewhere in the GAIN control range. If it does not, check that the source is functioning properly and that it is properly connected to the appropriate input of the mixer. You may also want to check the connecting cable for faults.

Since the PEAK indicator lights when the channel signal is 3dB below the clipping level, it is okay if it flashes briefly on loud peaks. In fact, this is about the optimum input sensitivity setting. When you've matched the first channel, set its fader to minimum and begin matching the next channel. Repeat this procedure for each channel you will use in the mix.

Once the input level of each channel has been matched, set the master stereo faders to their minimum positions and turn the POWER switch off. Reconnect the speaker systems, then turn the power back on. The master faders can now be gradually raised to their operating levels.

※ SETTING CHANNEL AND MASTER FADERS

The final positions of the channel faders will naturally depend on the overall mix you set up. However, there are two important points you should keep in mind when setting channel levels.

The channel faders have an optimum range that provides the maximum control margin with minimum noise and distortion. The optimum range for the channel faders on the PX-1650 is between about "5" and "15" on their scales. There is no rule that says you must avoid higher or lower settings, but remember that the best sound quality can be achieved within this range. Settings in this range also provide sufficient leeway for later adjustments.

Remember, too, that changing the setting of any single input channel fader will affect the overall output level. This is why it is important to watch the level meters when setting the input channel and master stereo faders. These meters should never read levels higher than about 0 VU. If they do, then the mixer levels are too high and the power amplifier may be overloaded, causing distortion.

It is generally best to use the master stereo faders when making small adjustments to the overall output level. But if these faders must be set to extremely low or high positions (lower than about "20" or higher than "5" on their scales), then the overall mix should be re-adjusted using the input channel faders so that the level meters show a proper level when the master stereos are set within the range described above.

※ USING THE CHANNEL EQUALIZERS

Each of the PX-1650 input channels has four equalizer (EQ) controls that make it possible to independently equalize the channel's signal to some degree. The rule of thumb, however, is that equalization should not be used unless it is absolutely necessary. Always put some effort into proper microphone selection, careful microphone placement, and fine adjustment of source instrument controls before resorting to equalization. Settle for this option only if you have set everything up as best you can and are still not satisfied with the sound.

Channel equalization can be most useful in tonally separating one sound from another, or from a group of sounds. Slightly boosting the high frequency of a guitar sound, for example, can give it the extra bite it needs to stand out more clearly from the background. Vocals tend to stand out better if given a bit of boost in the middle range. Speech generally benefits from a reduction in the low frequencies, to prevent the "boomy" sound that occurs when the speaker gets too close to the microphone. Experimentation and experience will tell you how much of what type of equalization is appropriate for different sound sources.

Also keep in mind the fact that the channel's PEAK LED indicator is post-EQ. Excessive boosting of a signal frequency may cause the PEAK LED to light more than briefly, indicating that you need to either reduce the input gain or reduce the amount of boost being applied.

* USING THE DIGITAL SIGNAL PROCESSOR

The PX-1650 provides 16 preset effect programs, and 16 parameter variations for each preset, making for a grand total of 256 different reverbs, delays, echoes, flanging, and chorusing effects. For each program, parameter 1 provides a "standard" setting, that is, a variation that is deemed as being most characteristic of that program type. To quickly audition the PX-1650 effects, set the parameter at "1" and change the program through its 16 different positions.

The chart below lists each program as well as describing the sonic variation caused by the different parameter settings.

DESCRIPTION	Para	EFFECT
Delays+Delays BANK 1	1	2-tap 25ms/65ms Slap + 2-tap 185ms/225ms 50% regen
	2	2-tap 55ms/70ms Slap + 2-tap 200ms/265ms 50% regen
	3	2-tap 65ms/85ms Slap + 2-tap 185ms/235ms 50% regen
	4	2-tap 100ms/120ms Slap + 2-tap 280ms/325ms 50% regen
	5	1-tap 25ms, 50% regen + 1-tap 50ms 40% regen
	6	1-tap 45ms, 50% regen + 1-tap 90ms 35% regen
	7	1-tap 75ms, 50% regen + 1-tap 150ms 35% regen
	8	1-tap 100ms, 50% regen + 1-tap 200ms 35% regen
	9	1-tap 125ms, 50% regen + 1-tap 250ms 35% regen
	10	1-tap 165ms, 50% regen + 1-tap 330ms 35% regen
	11	1-tap 250ms, 50% regen + 1-tap 125ms 50% regen
	12	1-tap 350ms, 50% regen + 1-tap 150ms 50% regen
	13	1-tap 450ms, 50% regen + 1-tap 50ms 50% regen
	14	3-tap 175ms Flat 0% regen + 3-tap 325ms Flat 0% regen
	15	3-tap 125ms Flat 0% regen + 3-tap 200ms Flat 0% regen
	16	3-tap 80ms Flat 0% regen + 3-tap 120ms Flat 0% regen
Gates+Reverse BANK 2	1	50ms Flat Dark
	2	50ms Flat Bright
	3	50ms Sloped Bright
	4	50ms Reverse Bright
	5	100ms Flat Bright
	6	100ms Sloped Dark
	7	100ms Sloped Bright
	8	100ms Reverse Medium
	9	150ms Flat Bright
	10	150ms Sloped Dark
	11	150ms Sloped Bright
	12	150ms Reverse Medium
	13	200ms Flat Bright
	14	200ms Sloped Dark
	15	200ms Sloped Bright
	16	200ms Reverse Medium

DESCRIPTION	Para	EFFECT
Delays/Flanger BANK 3	1	Slow wide Flange, 33% regen
	2	Medium Flange, 33% regen
	3	Tremolo Flange, 25% regen
	4	Slow wide Chorus
	5	Medium wide chorus
	6	Tremolo chorus
	7	Slow wide Flange w/150ms 20% regen DDL
	8	Medium Flange w/125ms 40% regen DDL
	9	Tremolo Flange w/100ms 20% DDL
	10	Slow wide Flange w/200ms 33% regen DDL
	11	Medium wide Flange w/75ms slap DDL
	12	Slow wide chorus w/50ms 33% regen DDL
	13	Medium wide chorus w/75ms 30% regen DDL
	14	Medium wide chorus w/125ms 25% slap DDL
	15	Tremolo chorus w/70ms slap DDL
	16	Tremolo chorus w/200ms 33% regen DDL
Flanger/Chorus + Flanger/Chorus BANK 4	1	Slow wide flange 50% regen + Slow wide flange 50% regen
	2	Slow wide flange 75% regen + slow wide flange 75% regen
	3	Medium wide flange 50% regen + Medium wide flange 50% regen
	4	Medium wide flange 75% regen + Medium wide flange 75% regen
	5	Tremolo Flange 33% regen + Tremolo Flange 33% regen
	6	Tremolo Flange 50% regen + Tremolo Flange 50% regen
	7	Slow wide 20ms chorus + Slow wide 20ms chorus
	8	Slow wide 10ms chorus + Slow wide 10ms chorus
	9	Medium wide 20ms chorus + Medium wide 20ms chorus
	10	Medium wide 10ms chorus + Medium wide 10ms chorus
	11	Tremolo 20ms chorus + Tremolo 20ms chorus
	12	Tremolo 10ms chorus + Tremolo 10ms chorus
	13	Very slow panner + Very slow panner
	14	Medium slow panner + Medium slow panner
	15	Medium fast panner + Medium fast panner
	16	Ultra fast panner + Ultra fast panner
Gated Reverb BANK 5	1	Medium-Slow wide chorus/50ms Bright Gate
	2	Medium-Fast wide chorus/50ms Dark Gate
	3	Medium-Slow wide flange/50ms Bright Gate
	4	Medium-Fast wide flange/50ms Dark Gate
	5	Slow wide chorus/100ms Bright Gate
	6	Tremolo chorus/100ms Dark Gate
	7	Slow wide flange/100ms Bright Gate
	8	Fast flange/100ms Dark Gate
	9	Medium-slow wide chorus/150ms Bright Gate
	10	Medium-slow wide chorus/150ms Dark Gate
	11	Medium-slow wide flange/150ms Bright Gate
	12	Medium-slow wide flange/150ms Dark Gate
	13	Medium-slow wide chorus/200ms Bright Gate
	14	Tremolo chorus/200ms Dark Gate
	15	Medium-Slow wide flange/200ms Bright Gate
	16	Fast flange/200ms Dark Gate

DESCRIPTION	Para	EFFECT
Reverb/Delays BANK 6	1	0.5s Room Bright w/100ms Slap DDL
	2	0.8s Room Bright w/125ms Slap DDL
	3	1.2s Room Bright w/175ms 33% regen DDL
	4	1.5s Room Bright w/200ms 50% regen DDL
	5	2.0s Hall Warm w/50ms double DDL
	6	2.5s Hall Bright w/100ms double DDL
	7	3.5s Hall Warm w/175ms 33% regen DDL
	8	5.0s Hall Bright w/200ms 50% regen DDL
	9	1.5s Chamber Bright w/100ms Slap DDL
	10	2.0s Chamber Warm w/150ms Slap DDL
	11	2.5s Chamber Warm w/175ms 33% regen DDL
	12	5.0s Chamber Warm w/225ms 50% regen DDL
	13	0.5s Plate Bright w/75ms double DDL
	14	1.0s Plate Bright w/125ms double DDL
	15	2.5s Plate Bright w/75ms double DDL
	16	3.5s Plate Bright w/125ms double DDL
Delays/Reverb /Flanger BANK 7	1	0.8s Bright Room, L=175ms/R=200ms, 40% regen DDL, wide chorus
	2	1.5s Warm Room, L=45ms/R=55ms, Slap DDL, medium-wide chorus
	3	2.5s Warm Room, L=80ms/R=120ms, 30% regen DDL, slow chorus
	4	3.0s Sizzle Plate, L=45ms/R=55ms, Slap DDL, Tremolo chorus
	5	0.5s Bright Plate, L=200ms/R=175ms, 40% regen DDL, med wide flange
	6	1.5s Warm Room, L=45ms/R=55ms, Slap DDL, medium-wide flange
	7	2.5s Warm Room, L=80ms/R=120ms, 30% regen DDL, slow flange
	8	3.0s Sizzle Plate, L=45ms/R=55ms, Slap DDL, Tremolo flange
	9	Slow panner
	10	Medium panner
	11	Fast panner
	12	1.5s Bright Hall reverb w/slow panner
	13	1.5s Bright Hall reverb w/medium panner
	14	1.5s Bright Hall reverb w/fast panner
	15	2.5s Bright Hall reverb + 200ms DDL + medium panner
	16	2.5s Warm Hall w.55ms DDL + Fast panner
Reverb+Flanger BANK 8	1	1.8s Warm Room, Slow wide flange, 33% regen
	2	1.2s Bright Room, Medium flange, 33% regen
	3	1.8s Warm Room, Tremolo flange, 25% regen
	4	1.8s Bright Plate, Slow wide chorus
	5	1.8s Warm Chamber, Medium wide chorus
	6	2.5s Bright Hall, Tremolo chorus
	7	2.5s Bright Plate, Slow wide flange w/150ms 20% regen DDL
	8	1.8s Warm Hall, Medium flange w/125ms 40% regen DDL
	9	1.8s Bright Plate, Tremolo flange w/100ms 20% regen DDL
	10	1.2s Warm Room, Slow wide flange w/200ms 33% regen DDL
	11	1.2s Bright Plate, Medium wide flange w/75ms Slap DDL
	12	2.5s Warm Chamber, Chorus w/50ms 33% regen DDL
	13	1.8s Bright Hall, Medium wide chorus w/75ms 30% regen DDL
	14	1.2s Warm Room, Medium wide chorus w/125ms 25% regen DDL
	15	1.2s Bright Plate, Tremolo chorus w/70ms Slap DDL
	16	2.5s Bright Plate, Slow wide chorus w/125ms Slap DDL

DESCRIPTION	Para	EFFECT
Reverb/Delay + Flanger/Chorus BANK 9	1	0.5s Bright Room w/100ms Slap DDL
	2	0.8s Bright Room w/125ms Slap DDL
	3	1.2s Bright Room w/175ms 33% regen DDL
	4	1.5s Bright Room w/200ms 50% regen DDL
	5	3.5s Bright Plate w/125ms double DDL
	6	2.0s Hall Bright w/100ms double DDL
	7	2.5s Warm Hall w/175ms 33% regen DDL
	8	3.5s Warm Hall w/200ms 50% regen DDL
	9	1.5s Bright Chamber w/100ms Slap DDL
	10	2.0s Warm Chamber w/150ms Slap DDL
	11	2.5s Warm Chamber w/175ms 33% regen DDL
	12	5.0 Warm Chamber w/225ms 50% regen DDL
	13	0.5s Bright Plate w/75ms double DDL
	14	1.0s Bright Plate w/125ms double DDL
	15	2.5s Bright Plate w/75ms double DDL
	16	3.5s Bright Plate w/125ms double DDL
Reverbs/Flanger BANK 10	1	0.8s Medium Bright Chamber, Slow wide flange
	2	0.8s Medium Bright Plate, Medium-slow wide flange
	3	0.8s Medium Bright Plate, Medium wide flange
	4	0.8s Medium Bright Room, Tremolo flange
	5	0.8s Medium Bright Room, Slow wide chorus
	6	1.0s Medium Bright Hall, Medium-slow wide chorus
	7	1.5s Medium Bright Hall, Medium wide chorus
	8	0.8s Medium Bright Plate, Tremolo chorus
	9	2.0s Medium Warm Room, Slow wide flange
	10	1.5s Medium Warm Room, Medium-slow wide flange
	11	1.0s Medium Warm Room, Medium wide flange
	12	0.5s Small Warm Room, Tremolo flange
	13	1.5s Medium Warm Room, Slow wide chorus
	14	2.0s Medium Warm Hall, Medium-slow wide chorus
	15	2.0s Medium Bright Hall, Medium wide chorus
	16	1.0s Medium Warm Room, Tremolo chorus
Reverbs 1 BANK 11	1	Bright 0.5s Small Room
	2	Warm 0.5s Small Room
	3	Bright 0.8s Small Room
	4	Bright 1.2s Medium Room
	5	Warm 1.2s Medium Room
	6	Warm 1.5s Medium Room
	7	Bright 1.5s Medium Room
	8	Dark 1.5s Medium Room
	9	Warm 2.0s Large Room
	10	Bright 2.0s Large Room
	11	Warm 2.5s Large Room
	12	Bright 2.5s Large Room
	13	Dark 2.0s Medium Hall
	14	Bright 2.0s Medium Hall
	15	Dark 3.5s Medium Hall
	16	Warm 3.5s Medium Hall

DESCRIPTION	Para	EFFECT
Reverbs 2 + Reverbs 2 BANK 12	1	1.8s Dark Plate + 0.8s Bright Plate
	2	1.8s Dark Room + 1.2s Bright Room
	3	1.8s Dark Chamber + 1.8s Bright Chamber
	4	1.8s Dark Hall + 2.5s Bright Hall
	5	2.5s Dark Plate + 0.5s Bright Plate
	6	2.5s Dark Room + 1.2s Bright Room
	7	2.5s Dark Chamber + 1.8s Bright Chamber
	8	2.5s Dark Hall + 3.5s Bright Hall
	9	3.5s Dark Plate + 0.8s Bright Plate
	10	3.5s Dark Room + 1.2s Bright Room
	11	3.5s Dark Chamber + 1.8s Bright Chamber
	12	3.5s Dark Hall + 2.5s Bright Hall
	13	5.0s Dark Room + 1.8s Bright Room
	14	5.0s Dark Plate + 3.5s Bright Hall
	15	10.0s Dark Hall + 1.8s Bright Chamber
	16	10.0s Warm Hall + 3.5s Bright Hall
Reverb+Reverb BANK 13	1	0.5s Dark Plate + 0.5s Bright Plate
	2	0.5s Dark Room + 0.8s Bright Room
	3	0.5s Dark Chamber + 1.2s Bright Chamber
	4	0.5s Dark Plate + 1.8s Bright Plate
	5	0.8s Dark Room + 0.5s Bright Room
	6	0.5s Dark Chamber + 0.8s Bright Chamber
	7	0.5s Dark Plate + 1.2s Bright Plate
	8	0.5s Dark Room + 1.8s Bright Room
	9	1.2s Dark Chamber + 0.8s Bright Chamber
	10	0.8s Dark Plate + 0.8s Bright Plate
	11	0.8s Dark Room + 1.8s Bright Room
	12	0.8s Dark Chamber + 2.5s Bright Chamber
	13	1.2s Dark Plate + 0.8s Bright Plate
	14	1.2s Dark Room + 1.2s Bright Room
	15	1.2s Dark Chamber + 1.8s Bright Chamber
	16	1.2s Dark Hall + 2.5s Bright Hall
Reverb 2 BANK 14	1	Bright 3.5s Large Hall
	2	Warm 3.5s Large Hall
	3	Bright 5.0s Large Hall
	4	Warm 5.0s Large Hall
	5	Warm 10.0s Large Hall
	6	Bright 10.0s Large Hall
	7	Bright 1.2s Chamber
	8	Warm 0.8s Chamber
	9	Bright 1.5s Chamber
	10	Bright 2.5s Chamber
	11	Bright 0.5s Soft Attack Plate
	12	Bright 0.5s Hard Attack Plate
	13	Warm 0.8s Hard Attack Plate
	14	Warm 1.5s Soft Attack Plate
	15	Warm 2.5s Soft Attack Plate
	16	Warm 2.5s Hard Attack Plate

DESCRIPTION	Para	EFFECT
BANK 15	1	L=50ms/R=100ms 50% regen
	2	L=75ms/R=150ms 50% regen
	3	L=120ms/R=190ms 50% regen
	4	L=180ms/R=320ms 50% regen
	5	50ms 5-tap. Sloped multitap L/R/L/R/L
	6	75ms 3-tap. Flat R/L/R
	7	100ms 3-tap. Sloped L/R/L
	8	125ms 3-tap. Sloped L/R/L
	9	L=25ms/R=35ms Slap
	10	L=35ms/R=50ms Slap
	11	L=65ms/R=80ms Slap
	12	L=100ms/R=120ms Slap
	13	80ms Ping-Pong delay, L/R/L 60% regen
	14	120ms Ping-Pong delay, L/R/L 60% regen
	15	160ms Ping-Pong delay, L/R/L 60% regen
	16	175ms Ping-Pong delay, L/R/L 60% regen
BANK 16	1	2-tap 185ms/200ms 33% regen DDL + 50ms Bright Gate
	2	2-tap 165ms/190ms 33% regen DDL + 50ms Dark Gate
	3	2-tap 150ms/180ms 33% regen DDL + 100ms Bright Gate
	4	2-tap 125ms/150ms 33% regen DDL + 100ms Dark Gate
	5	2-tap 185ms/200ms 33% regen DDL + 150ms Bright Gate
	6	2-tap 165ms/190ms 33% regen DDL + 150ms Dark Gate
	7	2-tap 150ms/180ms 33% regen DDL + 200ms Bright Gate
	8	2-tap 125ms/150ms 33% regen DDL + 200ms Dark Gate
	9	2-tap 25ms/35ms 0% regen DDL + 50ms Bright Gate
	10	2-tap 45ms/90ms 40% regen DDL + 50ms Dark Gate
	11	2-tap 45ms/65ms 0% regen DDL + 100ms Bright Gate
	12	2-tap 60ms/120ms 40% regen DDL + 100ms Dark Gate
	13	2-tap 65ms/75ms 0% regen DDL + 150ms Bright Gate
	14	2-tap 75ms/150ms 40% regen DDL + 150ms Dark Gate
	15	2-tap 85ms/100ms 0% regen DDL + 200ms Bright Gate
	16	2-tap 100ms/200ms 40% regen DDL + 200ms Dark Gate

Use the ON switch in the DIGITAL EFFECT section to turn the internal DSP on and off. The EFFECT RETURN 2 controls will adjust the level of the signal output by the internal DSP, and any input signals to the EFFECT RETURN 2 jacks will be ignored.

The current program selection is indicated by the bank of LED indicators at the top of the DIGITAL EFFECT section. To change the program or parameter selection, simply turn the program control.

* USING THE GRAPHIC EQUALIZER

The PX-1650 built-in graphic equalizer (GEQ) has two main uses: compensation for acoustic deficiencies in the listening area, and feedback control. Like the channel equalizers, the GEQ should not be used unless it is absolutely necessary. The more equalization you use, the more phase deviation you introduce into the program signal-and the greater the chance that the phase deviation can result in an unnatural, distorted sound.

There are many instances, however, in which the acoustic characteristics of the listening area cause response anomalies. Large areas of uncovered glass or tiled floors, for example, are extremely effective reflectors of high-frequency sound. Amplified sound produced in such environments can seem painfully sharp, in which case some reduction in the high-frequency range may be called for.

Smaller symmetrical rooms (a square room being the worst case) can actually have resonant frequencies within the audible low-frequency range. In such rooms, a slight reduction in the low frequencies can help to clarify the sound. Please note that in almost all cases, good equalization demands a cut in the offending frequency range rather than a boost in ranges where response is lacking.

The GEQ can also be used-although to a limited degree-to control feedback. Proper microphone placement is the primary means of preventing feedback, but this can be extremely difficult if you're working in a tight stage area. To get around this problem, try cutting response in the frequency range where the feedback is occurring (You may have to experiment a bit to find this range.). This solution will compromise the overall frequency response of the program, but it is better than running the risk of squealing feedback in the middle of an important performance.

* CONNECTING SPEAKERS

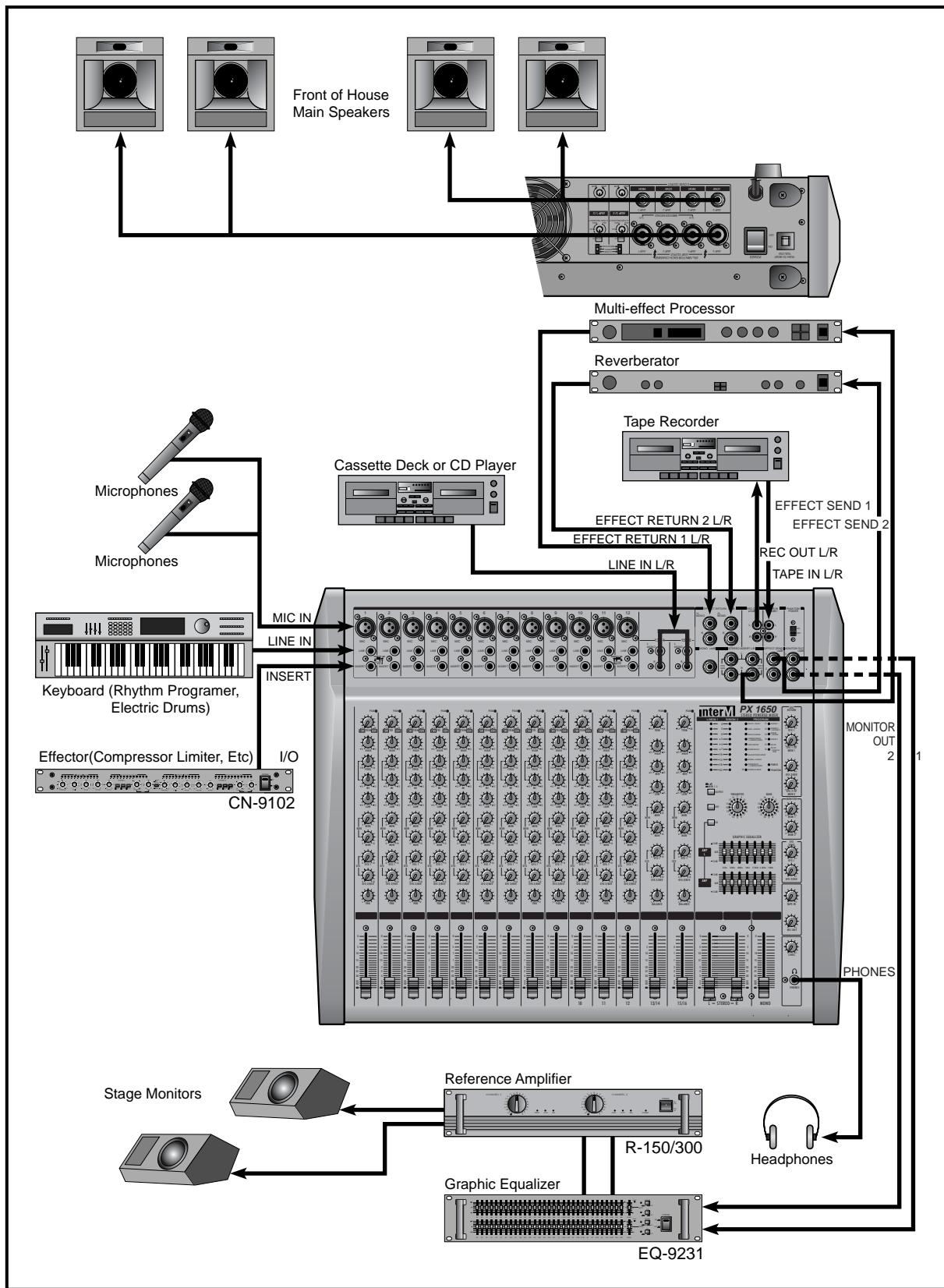
The PX-1650 Powered Mixer has two 1/4" phone jack and two speaker connect jack speaker outputs per channel. The outputs for each channel are connected in parallel internally. This places some restrictions on their use, as described below:

- If you connect speakers to only one of the output jacks (SPEAKER 1 or SPEAKER 2), on either channel (R or L), the total impedance of the speaker system connected to that channel may be no less than 4Ω .
- If you plug speakers to both the SPEAKER 1 and SPEAKER 2 or SPEAKER 3 and SPEAKER 4 jacks of either channel (R or L), the total load impedance of the speaker systems connected to each output of that channel must be no less than 8Ω (Note that two 8Ω speaker systems connected in parallel from a 4Ω load).
- The maximum total impedance of speakers connected to the speaker outputs of each channel should be 16Ω .
- The maximum speakers allowable per channel are: one 4Ω speaker, two 8Ω speakers, or four 16Ω speakers.

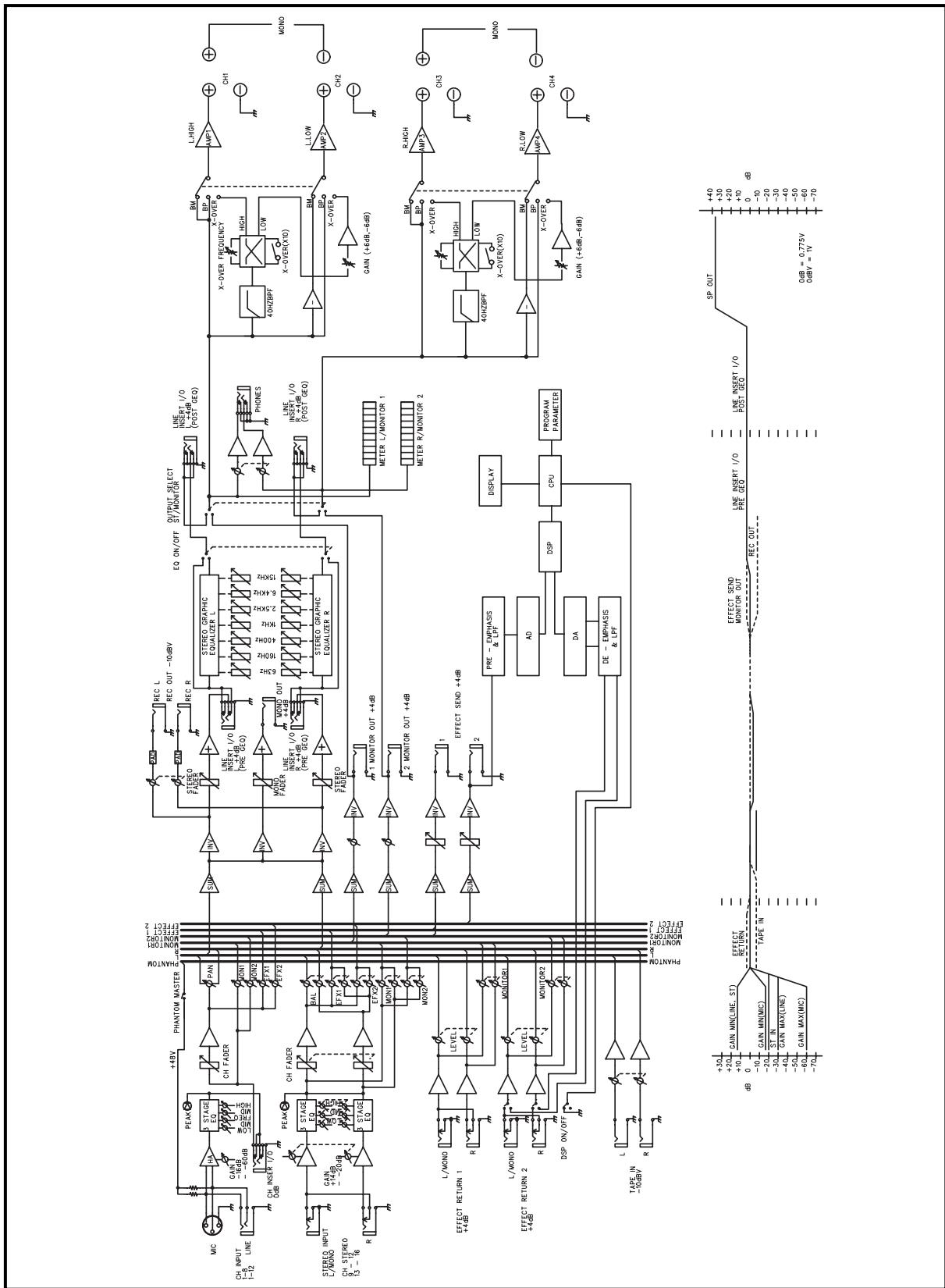
Although a higher total load impedance than the recommended 16Ω will only result in a loss of power output, a total load impedance that is too low can actually damage the PX-1650 Series.

- PX-1650 maximum output power
250 watt per channel with a total load impedance of 4Ω or 330 watt per channel with a total load impedance of 8Ω .
- Never connect or disconnect speakers while the mixer's power supply is turned on!
- Solid phone plugs can overheat when inserted in the rear-panel SPEAKER jacks of the PX-1650, causing a potential fire hazard. Make a habit of checking the metal tips of your speaker plugs, and cleaning them if necessary, before connecting them to the PX-1650.

Applications



Block Diagram



Specifications

0dB=0.775Vrms

- ELECTRICAL

Maximum Output Power (0.5% THD at 1kHz)	PX-1650: 250W + 250W + 250W + 250W/4Ω	
T.H.D (20Hz~20kHz)	Channel Input to Post-GEQ OUT: Less than 0.1%, +4dB output Post-GEQ IN to SPEAKER OUT: PX-1650: Less than 0.1%, 250W Output into 4Ω	
Frequency Response	20Hz~20kHz, +1dB/-2dB, 1W into 4Ω	
Hum and Noise (Average, Rs=150Ω) (w/BPF 20Hz~20kHz)	<ul style="list-style-type: none"> -127dB Equivalent Input Noise -96dB Residual Output Noise (Pre-GEQ Out) -96dB Residual Output Noise (Effect Send, Monitor Out) -73dB Residual Output Noise (Speaker Out) -83dB (Pre-GEQ) Master fader at maximum level -83dB (EFFECT SEND) Master VR at maximum level and all channel EFFECT controls at minimum level. -83dB (MONITOR OUT) Master VR at maximum level and all channel MONITOR controls at minimum level. 	
Maximum Voltage Gain	64dB	CH IN to Pre-GEQ OUT
	64dB	CH IN to MONITOR OUT A, B
	34dB	STEREO CH IN to pre-GEQ OUT
	64dB	CH IN to EFFECT SEND 1~2
	0dB	EFFECT RETURN 1, 2 to Pre-GEQ OUT
	0dB	EFFECT RETURN 1, 2 to MONITOR OUT
	11.8dB	TAPE IN 1, 2 to Pre-GEQ OUT
Crosstalk (at 1kHz)	70dB	Adjacent Input Channels
	70dB	Input to Output
Mono Input Channel Gain Control	44dB Variable (-60dB ~ -16dB)	
ST Input Channel Gain Control	34dB Variable (+14dB ~ -20dB)	
Mono Input Channel Equalization	<ul style="list-style-type: none"> ±15dB Maximum boost or cut in each band HIGH: 12kHz shelving MID: 250Hz~5kHz peaking LOW: 80Hz shelving * Turnover/roll off frequency of Shelving: 3dB below maximum variable level 	
ST Input Channel Equalization	<ul style="list-style-type: none"> ±15dB Maximum boost or cut in each band HIGH: 12kHz shelving MID: 2.5kHz (ST CH), 250Hz~5kHz (MONO CH) peaking LOW: 80Hz shelving * Turnover/roll off frequency of Shelving: 3dB below maximum variable level 	
Graphic Equalizer	±12dB Maximum boost or cut in each of nine bands : 63, 160, 400, 1k, 2.5k, 6.4k, 15kHz	
Level Meters	10 Dot LED level meter (PX-1650: 0 VU=1000W/4Ω)	
Channel Peak Indicators	Red LED on each channel turns ON when post-EQ signal reaches the level 3dB below clipping.	
Phantom Power	+48V is supplied to electrically balanced inputs to power condenser microphones via 6.8kΩ current limiting/isolation resistors.	
Digital Effect	16 program selection	
CROSSOVER MODE	Quad Stereo/2 Way Mono	
CROSSOVER FREQUENCY	60Hz to 250Hz (Sweepable)	
CROSSOVER FREQUENCY × 10	600Hz to 2.5kHz (Sweepable)	
CROSSOVER CUTOFF SLOPE	24dB/oct.	
SUBWOOFER FREQUENCY	4Ω	
HIGH PASS FILTER	35Hz, 18dB/oct.	

- GENERAL

Power Source	AC 110V – 240V, 50/60Hz
Power Consumption	760W
Weight	35kg/13.8lb
Dimensions	702(W) x 175(H) x 510(D) mm/27.6(W)x6.9(H)x20(D)in

- INPUT

Input Connector	Input Impedance	Nominal Impedance	Input Nominal Level	Connector Type
CH Mic	4kΩ	50-600Ω	- 60dB	XLR 3-31 Type Balanced
CH Line	4kΩ	600Ω	-30dB	Phone Jack (TRS) T=Hot R=Cold S=GND
Stereo Input	5kΩ	600Ω	-20dB	Unbalanced Phone Jack
EFX Return 1,2	10kΩ	600Ω	+4dB	Unbalanced Phone Jack
Mono Input Insert In	10kΩ	600Ω	0dB	Phone Jack T=Out R=In S=GND
Tape In	10kΩ	600Ω	-10dBV	RCA Pin Jack
Line Insert In (Pre-GEQ)	10kΩ	600Ω	4dB (1.23V)	Phone Jack T=Out R=In S=GND
Line Insert In (Post-GEQ)	10kΩ	600Ω	4dB (1.23V)	Phone Jack T=Out R=In S=GND

- OUTPUT

Output Connector	Output Impedance	Nominal Impedance	Input Nominal Level	Connector Type
Speaker Out 1,2 (L,R)		4Ω or 8Ω	1000W/4Ω	Phone Jack Speaker Connect Jack
EFX Send 1, 2	75Ω	600Ω	+4dB	Unbalanced Phone Jack
Monitor 1, 2	75Ω	600Ω	+4dB	Unbalanced Phone Jack
REC OUT L/R	600Ω	10kΩ	-10dBV	RCA Pin Jack
Mono Input Insert Out	600Ω	10kΩ	0dB	Phone Jack (TRS) T=Out R=In S=GND
Line Insert Out (Pre-GEQ)	600Ω	10kΩ	4dB	Phone Jack (TRS) T=Out R=In S=GND
Line Insert Out (Post-GEQ)	600Ω	10kΩ	4dB	Phone Jack (TRS) T=Out R=In S=GND
Phones Out	100Ω	40Ω	3mW	Stereo phone jack

* Specifications and design subject to change without notice for improvements.

MADE IN KOREA
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